

THE RELATIONSHIP OF PERSONALITY TRAITS TO DEPRESSION IN A
GERIATRIC POPULATION

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In later life, adverse life events, disability, health problems, inadequate social support, and personality traits hypothesized to be important risk factors for depression. Sample included 35 older (65-84) physical rehabilitation patients in a large metropolitan hospital. Statistical analysis included Pearson Product Moment correlations and multiple regression results. Perceived physical health, instrumental ADLs, life satisfaction, extraversion, and conscientiousness are inversely related to depressive symptom severity; neuroticism is positively related to depressive symptom severity. Regression models predicted depressive symptom severity, PANAS negative affect and PANAS positive affect. Neuroticism, instrumental ADLs, and age are significant predictors of depressive symptom severity; neuroticism and age are significant predictors of PANAS negative affect, while extraversion is a significant predictor of PANAS positive affect. Personality factors, level of functioning, and age are important factors relating to mood. Limitations of this study include: small sample size with special characteristics (high level of SES); incomplete personal and family history of psychiatric problems; and lack of clinical comparison sample.

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CHAPTER 1

INTRODUCTION

Although the construct of personality has been defined many ways, there is a general consensus on what it is. As far back as 1937, Allport collected more than 50 definitions of personality and also created one of his own. According to Allport, ‘personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment’ (Allport, 1937, p. 48). Key aspects of this definition that are shared by most other definitions of personality are that it is internal, organized, and characteristic of an individual over time and situations. Also included in this definition is the idea that personality traits can be adaptive or have motivational significance (Staub, 1980). Most viewpoints distinguish enduring personality traits from more transient affective states. For example, an occasional angry outburst by an individual would not brand him as a hostile person. However, if he were to show frequent displays of temper, he would probably be considered to be an angry or hostile person (Watson et al., 1994).

An area that has long been of interest in psychology is the relationship between personality traits and psychopathology (Maher & Maher, 1994). Recent studies that address this relationship suggest that a variety of personality or trait attributes may predispose individuals to mood disorders or may be altered as the result of the experience of a major mood disturbance (Ouimette, Klein, & Pepper, 1995). By identifying the personality traits associated with mood disorders, it may also be possible to tailor

therapeutic interventions for patients based on these personality characteristics. No doubt, such a therapeutic endeavor might be helpful in that individuals with depression and also an Axis-II disorder have a worse prognosis compared to those with only depression (Roth & Fonagy, 1996).

In studying the connection between personality and major mental disorders, researchers have frequently relied upon the five-factor model of personality and have found that some of the factors are related to several DSM disorders (Watson & Clark, 1994). The Big Five model (i.e., the five-factor model: Costa & McCrae, 1992a) is based on five broad and robust traits. Although they have labeled them with different names, researchers have recognized that the various factor models are quite similar in structure and meaning (Goldberg, 1993). The traits that make up the Big Five structure are neuroticism (or emotional disorganization) versus emotional stability (or ego strength); extroversion (or surgency); conscientiousness, dependability, (or will to achieve); agreeableness (or friendly compliance) versus hostile noncompliance; and culture, imagination, intellect, (or openness to experience) (Digman 1990; Digman & Takemoto-Chock, 1981; Goldberg, 1990, 1993; John, 1990; McCrae & Costa, 1987). Self-report measures have been shown to be valid and reliable for assessing individuals' personality traits as delineated by the five-factor model. These measures are useful for both healthy, as well as psychopathic, populations.

The Big Five model originated with Allport and Odbert's work on trait descriptors which they reduced to 171 variables (Digman, 1990; Goldberg, 1993; John, 1990). By sorting these variables into synonym groups, they reduced these variables to

35 bipolar scales through a cluster analysis of trait ratings. Cattell further reduced these 35 variables to 12-15 factors using peer ratings of these scales. However, subsequent investigators consistently found that five robust factors were sufficient to represent the structure of these traits (Borgatta, 1964; Fiske, 1949; Norman, 1963; Tupes & Christal, 1992). The robustness of this structure has been confirmed in studies involving widely diverse conditions and populations and different sets of trait terms (Digman, 1990; John, 1990)

A measure based on the five-factor model is the NEO Personality Inventory (NEO PI-R) designed by Costa and McCrae (1985). The following personality dimensions are included: Neuroticism (N), Extroversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Given that there is a general consensus and acceptance of the Big Five model (and some of the other models) researchers have used it to study the relationship between personality and mood disorders.

Studies On Associations Between Personality Traits and Depression

Bagby et al. (1992) used the Depressive Experiences Questionnaire (Blatt, 1976) to compare patients with panic disorder with agoraphobia with patients with non-psychotic, unipolar major depression. As they had predicted, their findings suggested that a personality attribute of self-criticism was unique to depression whereas another personality trait encompassing dependency was evident in both panic disorder and major depression. Their findings complemented a prior study by Nietzel and Harris (1990) that reported that the DEQ self-criticism scale consistently yielded some of the largest effect sizes with depression in numerous studies. However, other studies employing similar

measures of the dependency and self-criticism constructs showed that dependency, not self-criticism produces larger effect size in various associations with depression (Blaney & Kutcher, 1991; Robins et al., 1989; Robins and Luten, 1991). One interpretation of the different findings above is that both constructs (self-criticism and dependency) reflect the higher order construct of neuroticism.

In a study comparing the personality traits of subjects with bipolar disorder in remission to subjects with no history of mental illness, Solomon et al. (1996) found that the subjects with bipolar disorder in remission had more aberrant scores on 6 of the 17 personality scales selected for their relevance to mood disorders. These factors included decreased Emotional Stability and Objectivity, increased Neuroticism, poor Ego Resiliency and Ego Control, and increases on Hysterical Factor scores. These findings indicated that patients with bipolar disorder in remission have personality traits that differ from those of normal controls.

Young et al. used the Tridimensional Personality Questionnaire (Cloninger, 1987) to compare the personality dimensions of bipolar and unipolar patients. They found that both groups scored higher on the harm avoidance (HA) dimension than the nonpatient comparison group. High scores on the HA dimension are associated with "...apprehension, shyness, pessimism, and fatigue" (Svrakic et al., p. 140), features similar to the neuroticism construct. However, the bipolar disorder group also showed a higher novelty seeking (NS) score than either the unipolar depression or nonpatient subject group. Persons scoring high on the NS dimension are described as "...curious, impulsive, quick-tempered, and disorderly (Svrakic et al., 1991, p. 140)." Therefore,

Young et al. seemed to have found a personality trait, need of stimulation or novelty seeking, that may distinguish between bipolar disorder and unipolar disorder, while also showing that both mood disorder groups have higher levels of traits related to neuroticism.

Many of the studies on the relationship between personality and depression have continued to search for specific traits that might distinguish different types of mood disorders. Bagby et al. (1996) used the NEO PI-R to compare the personality traits of outpatients with seasonal depression to patients with non-seasonal depression. The patients were tested during their acute phase. They found that the seasonal affective disorder (SAD) patients had higher scores on the Openness trait compared to the non-seasonal patients, suggesting that the SAD patients may represent a distinct subgroup of depressive patients. From their scores on Openness, which includes the lower-order factors of Aesthetics, Feelings, and Ideas, Bagby et al. inferred that SAD patients were "...more imaginative, more emotionally sensitive, and more likely to entertain unconventional ideas than non-SAD patients (Bagby et al., 1996, p. 89)." Since SAD patients are more sensitive to their internal and external environments, it may be that they are more sensitive to changes in light than non-SAD patients. Also, people who score high on the Ideas facet of Openness show a willingness to consider new or unconventional ideas. This may be why SAD patients search for external, relatively unconventional explanations for their depression. Another possibility not mentioned in this study is that biology may play a stronger role in SAD patients and personality (e.g. neuroticism) a stronger role in non-SAD ones.

These examples of past research indicate that individuals with affective disorders manifest more extreme levels of certain personality traits. The general trend in past research has been the finding that nongeriatric adult populations with both bipolar and unipolar disorder vary from controls on measures reflecting the NEO-FFI measure of N (Neuroticism). Therefore, in the present study, it was expected that similar findings could be demonstrated in a geriatric population of rehabilitation patients. Specifically, it was hypothesized that those who scored more highly on the N (Neuroticism) factor of the NEO-FFI, indicating that they experience more emotional instability, would also show higher depressive symptom severity.

Family Studies

A more challenging and convincing way of studying the relationship between personality traits and depression is to test first degree relatives of individuals with clinical depression on personality measures. This approach is supported by findings that major depression is familial (Nurenberger & Gershon, 1992) as are most personality traits (Klein et al., 1995). In addition, studies have found a connection between personality, depression, and genetics (Ouimette, 1996; Ouimette, 1992; Kendler, 1993).

Among index patients with mood diagnoses, the reported incidence of mood disorders among their first-degree relatives is 7% (Perris, 1966). Leonhard (1969) estimated the mood disorder morbidity risk for unipolar probands' siblings at 4.6% and for their parents at 5.3% in contrast to the general population morbidity rate of about 2% to 4% (Fieve, 1975). The most recent estimates cited by Sullivan et al. (2000) indicates

that the morbidity rates in first-degrees relatives of a clinical sample varies from 15.2% to 21.6% in contrast to the general population morbidity rate of about 7.8%. In the general population, lifetime prevalence of major depressive episodes in the United States was estimated at 5.8% for major depressive episodes and 3.3% for dysthymia in data analyzed from the ECA program of the NIMH study (Regier et al., 1988). In summary, twin, adoption, and family studies have been used to assess the role of genetic factors in depression. Data from these studies suggest that unipolar depression is clearly associated with genetic factors (Allen, 1976; Blehar, Weissman, Gershon, & Hirschfeld, 1988).

Most of the early studies on bipolar disorder showed that this illness also tends to be familial (Kallmann, 1954). The lifetime risk published by Kallman for first degree relatives like parents of bipolar probands and for siblings for the bipolar disorder was 23.4% and 22.6% respectively. Angst (1966) reported the frequency of mood disorders among relatives of bipolar probands among first-degree relatives of approximately 12% to 22%. Leonhard (1969) estimated the mood disorder morbidity risk for bipolar probands' siblings at 10.6% in contrast to the general morbidity rate of about 2 to 4% (Fieve, 1975). In second-degree relatives, the lifetime risk rates usually ranged from 1-4%. Therefore, the lifetime risk for the disease in relatives of bipolar probands is significantly higher than the general population prevalence of less than 1% in industrial nations (ranging from 0.6 to 0.9 percent, with 1.2 percent being a combination of bipolar-I and -II patients, Weissman et al., 1988) yet this risk decreases as the degree of consanguinity is lowered. This decreasing risk associated with lower levels of relationship to bipolar probands is expected given the genetic component in this disease

(Sevy, S., Mendlewicz, J., & Mendelbaum, K., 1995). After reviewing all family studies, Sevy et al. (1995) estimated the risk for bipolar disorder in the relatives of affected patients to be between 15% and 35%. When correction has been made for age, diagnoses, and statistical procedures, the morbidity risks for bipolar disorder in different types of first-degree relatives (parents, siblings, children) are similar. This observation is consistent with a dominant mode of transmission in this disease. Allen's (1976) review of the extant twin literature on mood disorders indicated that concordance rates for monozygotic bipolar twins is 72% and 14% for dizygotic twins. This, both unipolar and bipolar mood disorders have genetic components; and since personality has also been shown to be strongly genetic, mood and personality may be meaningfully related.

Ouimette cited three case-control family studies that examined the relationship between personality and mood disorders in the first-degree relatives of probands with mood disorders. At that time, these were the only case-control studies of this relationship that he had been able to find. In the first of these studies by Maier et al. (1992) reported a difference between relatives of affectively ill patients without a personal history of psychiatric disorder and relatives of controls. The difference between these groups was that relatives of probands scored higher on measures of rigidity and neuroticism, although the latter difference was only found in male relatives. Maier (1992) also found that relatives with a past history of affective history differed from the control group on measures of neuroticism, extroversion, frustration tolerance and rigidity.

In the second study comparing the adolescent offspring of probands with unipolar disorder, Ouimette et al. (1992) were unable to find differences between the offspring and

controls on measures of personality including dependency, self-criticism, neuroticism, introversion and obsessionality. However, they were able to find a difference between offspring with and without a history of mood disorder on measures of self-criticism and extroversion. Thus, there is evidence that mood and personality are related in relatives of patients with mood disorders. Also to some extent, both of these studies suggest that personality may be altered following a mood disorder (Ouimette et al., 1992).

In a third longitudinal study (Kendler et al., 1993) examined the relationship between personality and depression in a large sample of female twins. Using a shortened version of the Eysenck Personality Questionnaire (EPQ), they studied several models of personality and depression. These models included a predisposition hypothesis, a state-dependent hypothesis, and a complication hypothesis. The predisposition hypothesis states that personality may predispose individuals to affective disorder, the state-dependent hypothesis says that disturbances in personality (e.g. high neuroticism) may be a correlate of acute affective disorder, and the complication hypothesis says that disturbances in personality may be a consequence of the disorder (Barnett and Gotlib, 1988; M. H. Klein et al., 1993). The results indicated that neuroticism predicted first-onset of major depression. However, neuroticism was also influenced by depressive state and was altered by the experience of depression. Therefore, this study provided evidence for all three hypotheses.

In their family study, Ouimette et al. (1996) examined first degree relatives of outpatients with depressive disorders and controls by having them complete a battery of personality inventories which assessed sociotropy, autonomy, dependency, self-criticism,

neuroticism, extroversion, and hopelessness. The three hypotheses tested in the study were: (1) whether personality was a predisposing factor for depressive order, (2) whether changes in personality were dependent on the depressive state, and (3) whether the experience of clinical depression subsequently altered personality functioning. Ouimette et al.'s findings supported the second or state hypothesis. For six of the nine scales, currently depressed relatives differed significantly from relatives with a past history of mood disorder and from relatives with no personal history of affective disorder. The third hypothesis that the experience of clinical depression alters personality functioning was also supported by this study. Relatives with a past history of mood disorders scored higher than relatives with no history of mood disorder on three personality traits: dependency, self-criticism, and neuroticism. This result indicates that depressive episodes can have a long-term effect on an individual's psychosocial adjustment long after recovery from the episode. However, Ouimette et al. (1996) noted that a potential confound existed. One of the relatives may have had residual depressive symptoms that influenced their self-reported personality. In addition, Ouimette et al. (1996) failed to assess the level of depressive symptomatology at the time of the personality assessment and so cannot rule out this alternate hypothesis.

The trends in Ouimette et al.'s (1996) data tended to also support the predisposition hypothesis; however, their research findings did not reach conventional levels for significance. However, the lack of a significant finding for their predisposition hypothesis may have been the result of the limited power of the study.

Yeung et al. used the NEO Five-Factor Inventory designed by Costa and McCrae (1985) in their family study. When compared to relatives of patients with schizophrenia or bipolar disorder, the relatives of patients with unipolar depression were not significantly different in terms of their personality traits or in their prevalence of personality disorders (Yeung et al., 1993). This study seems to argue against differences in personality traits between relatives of patients with bipolar and unipolar depression.

The prior research supports a familial basis for both mood disorders and personality traits, and that there is an important relationship between mood and personality. Studies of first degree relatives of probands indicate that they score differently than controls on personality measures including rigidity, neuroticism, extroversion, and frustration tolerance. This tendency for first-degree relatives of probands to vary from controls on measures of personality argues for several possible connections between mood disorders and personality. Three connections explored in research are: (1) whether certain personality traits predispose individuals to affective disorders, (2) whether personality is dependent on the depressive state, or (3) whether affective disorders affect personality over the course of life. Each of these hypotheses has received some support from previous research.

Treatment Implications of Personality Traits

In a 1995 study, Bagby et al. found that Neuroticism (N) may be a predisposing factor for major depression. In addition, they found Extroversion (E) to be the best predictor of treatment outcome. The NEO Personality Inventory (Costa & McCrae, 1985) was administered to a sample of unipolar, nonpsychotic depressed outpatients

receiving pharmacotherapy. These patients were assessed both at treatment entry and 3 months following the initiation of treatment. The Openness, Conscientiousness, and Agreeableness dimensions were not changed between the first and second assessments. However, the N and E dimension scores were altered by the depressive episode. Although a decrease in N scores accompanied a reduction of the severity in depression on the second assessment, the N dimension for the recovered patients was still at least one standard deviation above the normative sample. Recovery at the second assessment was accompanied by an increase in E. Moreover, E was a significant predictor of recovery from the depressive episode, with the Gregariousness facet of E being the best predictor. As mentioned previously, individuals with depression and an Axis II disorder have a worse prognosis than those with depression only. Thus, aspects of the Axis II personality disorder play a role in the treatment of depression.

Although Bagby et al. found that E was predictive of successful response to pharmacological treatment, they had not used other treatment or placebo groups. This failure to use other groups limits the inferences that can be drawn from this study regarding differential treatment effects. Bagby et al. pointed to a theory of Miller's (1991) that proposes that extraverted patients will respond more positively to interpersonal psychotherapy than introverts. Miller (1991) theorizes that E may represent a nonspecific predictor of treatment response. Bagby also cited Costa and McCrae's (1992) theory that introverts would benefit more from antidepressant medication than they would from individual or group psychotherapy because of their interpersonal detachment. He noted that more research is needed to match clients to treatments. He

felt that the five-factor model provides a good framework within which to conduct research on the relationship of individual differences to treatment outcomes.

In a related study, Spinhoven et al. (1996) sought to investigate the contribution of personality traits to length of treatment in a behavior therapy oriented outpatient treatment setting. All the patients admitted to this program, completed the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1991) prior to treatment. They found that the length of treatment in a behavior therapy-oriented outpatient setting was affected by the patients' basic personality structure. Introverts stayed much longer in therapy and received more treatments. Spinhoven et al. came up with possible explanations for this difference in treatment length. One of the explanations may be that introverts are longer in therapy because "...they have more severe psychopathology, that is also more stable and traitlike in character" (Spinhoven et al., 1996, p. 861). Another explanation for the difference in treatment length may be that introverts need more time to engage in a therapeutic relationship, before changes can occur. Extroverts may also feel more comfortable discussing what they learn in therapy with their friends and family. This tendency to communicate with their support network could enhance the effectiveness of the interventions. A limitation of the study was that no severity measurements of psychopathology were used (Spinhoven et al., 1996), therefore it is difficult to know how much of the difference between the two groups was attributable to symptom severity rather than to personality traits.

Joffe et al. (1993) attempted to distinguish between personality traits associated with situational and non-situational depressed groups using the NEO-PI (Costa &

McCrae, 1985). Situational major depression as defined by the Research Diagnostic Criteria (RDC) applies to a major depressive illness which has developed after an event that substantially contributed to the development of the episode (Spitzer, Endicott, & Robins, 1978). The diagnosis of situational depression is entirely dependent on the clinician's judgment that the depressive episode is not significantly related to preceding life events and is not defined by particular symptomatology. Joffe et al. (1993) observed no significant differences in the personality variables on the NEO-PI for the two groups. However, they did find that recovery from depression was associated with significant changes in several of these personality measures including neuroticism, extroversion, and openness. However, these changes in personality measures did not distinguish situational depressives from non-situational depressives. They also found that situational depressives had a less recurrent course of illness and appeared to respond more completely to the antidepressant used for their current episode than nonsituational depressives. Situational patients may identify an external factor as the trigger for their depression though biological factors may still play an important role in that depression. During treatment, this trigger may change or disappear. Their findings were inconsistent with prior findings that suggested that endogenous depression is more responsive to pharmacological treatment than reactive depression (Paykel, Klerman, & Prusoff, 1974). The more complete response of the situational group may be due to the less recurrent nature of their illness rather than to the presence or absence of a precipitant. Joffe et al. (1993) conceded that identification of a psychosocial trigger for an episode of depression may have profound importance for the individual with depression. Presumably this

would mean that situational depressives may be impacted by finding and working with the trigger. However, Joffe et al. emphasizes that the situational nature of depression should not preclude the use of antidepressants for this group of patients.

Prior research indicates that personality not only determines a predisposition to mood disorders but that it may also predict which treatment methods may be most effective for the treatment of mood disorders. For example, Extroversion can be a good predictor of the efficacy of pharmacological treatment or introversion/extroversion can predict the efficacy of a pharmacological intervention versus therapy. Showing that personality can predispose geriatric individuals to mood disorders could pave the way to research regarding whether they have personality traits that affect treatment efficacy.

Although there have been studies indicating a relationship between mood disorders and personality in other age groups, there has been very little research replicating these findings in a geriatric population. Therefore, it is important to see if this relationship will extend to the geriatric age group. Although very little existing literature has explored the relationship between mood and personality within a geriatric population, there is an increasing amount of research being done in the field of geriatric mood disorders. It is important to review some of this literature to see how similar mood disorders are in geriatric samples compared to other age groups.

Studies Involving Depression in the Elderly

In a 1995 review article, Futterman et al. asserted that depression is probably the most well-researched mental health problem of later life. From 1980 to 1991 alone, more

than 900 articles have been published in the major research journals in the United States and abroad (National Library of Medicine, 1991 by Futterman et al., 1995).

In addition to being so well-researched, depression in the elderly is also one of the most commonly diagnosed mental disorders (Blazer, 1982; Blazer, Hughers, & George, 1987). Although depression is one of the most common psychiatric conditions presenting to geropsychiatric services, doctors in general have a poor knowledge of depression (Bowers et al., 1992). Brodaty et al (1993) conjectured that this poor knowledge may be due to physicians' prejudices in regard to this population and their prognosis (Comfort, 1980). It may also be due in part to a tendency for late-life individuals with depression to focus their attention and complaints on somatic rather than express mood-based symptoms (Brown, Sweeney, Loutsch, et al., 1984; Ruegg, Zisook, Swerdlow, 1988). However, in some studies, there are minimal or no differences in the symptomatic presentations of depression in old versus young adults (Blazer, 1997). On the other hand, elderly inpatients with major depression have been reported to have an average of five comorbid Axis III disorders, with circulatory and digestive disorders being the most prevalent (Zubenko, Mulsant, Rifai, et al., 1994). In addition, many of the medical conditions common in the elderly are associated with especially high rates of depression. (Cohen-Cole & Stoudemire, 1987).

Since the prognosis of depression in the elderly has been disputed, Brodaty et al (1993) attempted to examine the prognosis of depression in a cohort of elderly patients, compared to the prognosis of depression in patients younger than 60 years of age. The investigators also investigated factors influencing the outcome of depression in the

elderly. One symptom difference between the two groups was a higher incidence of psychotic depression in the elderly patients compared to the younger sample. More of the elderly patients also developed dementia or died than in the younger group. Although the rate of dementia was greater than would be expected in the general population of the same age, the number of cases found in that study was too small to make a meaningful comparison with the expected population incidence or with the incidence reported in previous studies. However, although the death rates among elderly patients in the study was greater than would be expected in the general population, they were equal to or less than those previously reported in depressed clinical populations.

Despite these differences, Brodaty et al. found no significant difference in outcome between younger (under 40 years), middle aged (40-59), and older (60 years or more) depressed patients at a follow-up of patients at about 1 and 3.8 years. They felt that their findings presented a more optimistic outlook and the need for longer, more assertive treatment for elderly, depressed patients. Also, the results indicate that depression is not elevated in the elderly.

However, as in other stages of life, depression in late life tends to be a chronic and recurrent disorder. In Murphy's 1994 first year follow-up study of 124 subjects with late-life depression, only 35% achieved full remission of symptoms without evidence of relapse, 22% got well but relapsed, 29% remained continuously ill, and 14% died. Additionally, risk factors for poor outcome include lack of appropriate acute and maintenance treatment, severe initial symptoms, cognitive impairment, and physical illness.

Another problem in the diagnosis of depression in the aging is that mental health professionals more frequently attribute depression in older clients than younger clients to organic illness or dementia (Gatz & Pearson, 1988; Perlick & Atkins, 1984; Rapp & Davis, 1989). The prevalence of cognitive impairment increases with age (Robins, 1991). However, it is possible that geriatric patients may be presenting with a comorbid dementing disorder or subclinical cognitive dysfunction amplified by depression (Riefler, 1989; Cummings, 1992). Dementing disorders are prevalent in late life and are associated with markedly elevated rates of major depressive disorder (Riefler, 1989; Cummings, 1992). Depressive symptoms may even be one of the earliest manifestations of primary degenerative dementia. Indeed, it may be difficult to differentiate between a depressive and dementing diagnosis because the cognitive symptoms of the two disorders may overlap (Zisook, 1998). By attributing depressive symptoms to cognitive degeneration rather than to depression, physicians may be missing the opportunity to treat depressive symptoms in cognitive illness comorbid with mood disorders or in mood disorders that are mistaken for cognitive degeneration.

Age projections. These misconceptions about depression in older populations become more relevant when the current aging of America's population is considered. According to the U. S. Bureau of Census (1991, by Futterman et al., 1995), the median age of the U. S. population was 28 years in 1970; the median age had increased to 31.8 years by 1986. As the median age has increased, so has the number of people over the age of 65 years of age. While elders comprised only 9% of the population in 1960, they comprise almost 13% of the current population, and are projected to comprise over 15%

of the population by 2010 (Futtermann et al., 1995). A U. S. Senate Special Committee on Aging report (1991) projected the elderly population to comprise 22.9% of the population by 2050 (cited in Zisook & Downs, 1998). The number of people over age 65 has increased from 20 million people in 1970 to 29.4 million people in 1986 (Futtermann et al., 1995).

Prevalence estimates of depression. The estimated prevalence of depression in community-dwelling elderly is 3-4% according to the NIMH/NIH Epidemiological Catchment (ECA) study (Myers et al., 1984; Regier et al., 1988). According to the ECA study, 2% of the elderly experience a full major depressive disorder, 2% experience dysthymia, and 0.2% experience bipolar disorder (Zisook, 1998). In the ECA study, DSM-III criteria were used to diagnose MDD using the Diagnostic Interview Scale (DIS; Robins, Helzer, Croughan, & Ratliff, 1981). The prevalence of depression in the elderly is generally lower than the 6.3% rate of full major depressive disorder and 3.2% rate of dysthymia found in the general population according to the NIMH/NIH ECA study (Kaelber, et al., 1995).

Prevalence estimates on depression in the elderly differ depending on the definition, method of assessment, and the particular sample used. If any disorder containing clinically significant depression symptoms (e.g., MDD, dysthymia, and bereavement) were included in the depression diagnosis used in the ECA study, the prevalence rate would be 6% rather than 3 to 4%. This increased rate of 6% reflects the use of the same sample used in the original study (Myers et al., 1984). In community samples where self-administered, questionnaire based-ratings are used, rates as high as

15-20% have been reported. This higher rate of depression using a community sample may suggest higher prevalence rates than those obtained in the ECA study (Futterman, et al., 1995).

Factors which Affect Incidence of Depression

The incidence rate of depression in the elderly may also be affected by the use of specific samples rather than of community samples (Futterman et al., 1995). For example, nursing home samples show a higher rate of major depression (12%) than that expected in a community sample of the elderly (Blazer, 1993).

Subgroups. Several studies have also found depressive symptoms in older adults to be the most prevalent in the “oldest old” (80 years and older) (Murrell, S. A., Himmelfarb, S., & Wright, K., 1983; Berkman, L. F., Berman, C. S., Kasl, S. et al., 1986; Kennedy, G. J. Kelman, H. R., Thomas, C., et al., 1989, Zarit et al., 1999). Within the age group of 65+, there are mixed findings on the relationship between depression and age. Newman (1989) found an inverse relationship between age and depressive symptomatology when he discriminated between individuals over 65 years of age on the basis of major and minor depression. He found that the prevalence of major depression tends to decrease among the older-old, while the prevalence of minor depression (depressive syndromes not fulfilling diagnostic criteria for MDD) seems to be highest in the oldest age groups. Beekman et al. (1997) also showed that the older-old (75-85) were less likely to suffer from major depression than the younger-old.

For two groups of older adults, the prevalence estimates are double to triple those found in the community. These two groups consist of physically ill older outpatients and

elders who live in residential care facilities due to chronic disease or extreme disability. Prevalence of depression among the elderly receiving outpatient care for medical illness has been estimated at 6 to 9% (Futerman et al., 1995). These prevalence rates are estimated on studies by Spitzer et al. (1978) using Research Diagnostic Criteria and by other researchers using DSM-III criteria for MDD (Katon & Sullivan, 1990; Rapp, Parisi, & Walsh, 1988; Von Korff et al., 1987). Blazer (1993) has estimated the rate of major depression in nursing home residents as approximately 12%. Lesser, but clinically important depressive symptomology occurs in an additional 30% to 35% (Blazer, 1993). Perhaps more alarming is the 14% incidence of new cases of depression over a 6-month period (Katz & Parmelee, 1994).

Physical Illness and Pain. Research also shows an association between physical illness, pain, and depression in both young and old (Katon & Sullivan, 1990) outpatient and institutionalized samples (Berkman et al., 1986; Moss, Lawton, & Glicksman, 1991; Parmelee, Katz, & Lawton, 1991; Williamson & Schulz, 1992a, 1992b). Increased pain and severity of illness are both directly related to increased severity of depression (Parmelee et al., 1991). Older adults tend to experience physical illness and pain more often than younger adults (Katon & Sullivan, 1990), yet older adults do not necessarily become depressed more often than young adults when faced with illness. Using the dexamethasone suppression test (DST), Koenig et al. (1991) examined depressive disorders in young (20-39) and old (70-102) medically ill, hospitalized men. Mild depression was diagnosed in 18% of the young, and 29% of the old patients. However, major depressive disorder (MDD) was diagnosed in 22% of the young, and only 13% of

older patients. Both groups of men reported similar patterns of symptoms of prolonged duration, while more severe symptomology in the younger men was associated with MDD. These findings suggest that medically ill older adults may be no more vulnerable to depression than younger adults, because of the similar effects of depression in both groups (Futterman, et al., 1995). However, this does not make the rate of depression in hospitalized patients negligible.

Recent studies indicate that between 35% and 45% of hospitalized elders experience a depressive syndrome (including both subclinical depression and major depressive disorder, Koenig, Meador, Cohen, et al., 1988; Koenig, Meador, Shelp, et al., 1991; Kitchell, Barnes, Veith, et al., 1982; Rapp, Parisi, & Walsh, 1988; Koenig & Blazer, 1992). Although some of these depressive episodes are transient and resolve spontaneously without treatment (Rapp, Parisi, & Wallace, 1991; Feldman, Mayo, Hawton, et al., 1987; Mossey, Knott, & Craik, 1990; Walker, Novack, & Kaiser, 1987), it has been demonstrated that major depressive disorder does not resolve spontaneously for many months following discharge (Rapp, Parisi, & Wallace, 1991; Koenig, Goli, Shelp, et al., 1992; Schleifer, Macari-Hinson, Coyle, et al., 1989). MDD is present in about 10% of older inpatients (Mossey, Knott, & Craik, 1990).

Neurochemistry. One of the factors that influences the variance in symptom severity in geriatric depression is change in neurochemistry associated with normal aging and depression. These changes are hypothesized to include loss of neurons due to norepinephrine depletion, serotonin depletion, and abnormal functioning in the hypothalamic-pituitary-adrenal (HPA) axis.

The norepinephrine depletion model suggests that there is a reduction of noradrenaline neurones in some brain areas (locus ceruleus and the globus pallidus) with age (Riederer et al., 1980), though findings from studies of noradrenaline receptors and breakdown products in the CSF and blood are inconsistent (Gross-Isseroff et al., 1989).

Some studies indicate a reduction in serotonin (5HT) and one of its precursor enzymes, tryptophan hydroxylase, with ageing (Wong et al., 1984). There is also evidence of serotonin (5HT) changes associated with depression. Tritiated imipramine binding has been used to measure 5HT depletion indirectly and has been discovered to be reduced in older people (Nemeroff et al., 1988).

Changes in HPA functioning related to aging include an increase in plasma cortisol concentrations (Davis, et al., 1984). No age-associated change has been found for dexamethasone nonsuppression (Davis, et al., 1984). Currently, the relationship between HPA functioning and depression in old age is unclear.

Although one of the factors that influences the variance in symptom severity in geriatric depression is hypothesized to be a change in neurochemistry associated with normal aging, none of the existing models (norepinephrine depletion, serotonin depletion, abnormal functioning of the HPA axis) adequately explain this process. Therefore, the current study did not use any of these neurochemical models as a factor for examining symptom severity in depression.

Dementia. Particularly relevant to the present study are the neuroanatomical and neurochemical changes associated with late-life depression and dementia. There is a large overlap between depressive disorders and dementia. Studies show that

approximately 30% of patients diagnosed with Alzheimer's disease also meet criteria for clinical depression (Teri & Wagner, 1992) and approximately 20% of depressed patients exhibit cognitive impairment severe enough to be diagnosed as dementia (LaRue et al., 1986). Depression is thought to cause other functional deficits in dementia patients that cannot be traced to the dementing process. Two of the deficits found in Alzheimer's patients with depression are greater behavioral disturbance (Reifler, Larson, & Teri, 1987) and functional deficits (Pearson, Teri, Reifler, & Raskin, 1989; Rovner, Broadhead, Spencer, Carson, & Folstein, 1989) compared to those found in Alzheimer's patients without depression. Also, depressed Alzheimer patients tend to have less cognitive impairment (Teri & Wagner, 1992). The behavioral disturbances, functional deficits, and less cognitive impairment in persons with both Alzheimer's and depression suggests that depression is a source of excess and treatable disability in dementia (Reifler & Larson, 1989).

Social Support. Older adults who lack social support are another subgroup which is at greater risk for depressive disorders. In a 1997 study using a community sample, Prince found that there was a graded relationship between the number of social support deficits (SSDs) an older adult had and depression. They also found that the number of SSDs also related to age, handicap, loneliness and use of homecare services. Loneliness by itself was strongly associated with depression.

Marriage is associated with low mortality and good health, although this protective effect seems to be stronger for men than for women (Jacobs, 1977; Berkman & Syme, 1979). In younger people marriage has been shown to protect against depression

among men but not among women (Gove, 1972). In Gove's study the excess of depression in women relative to men was greatest in married people. In their 1997 study, Prince et al. also reported that marriage confers protection against depression for men; however, married women are at greater risk relative to never married women. Prince et al. also showed that this effect persists into older age. Notably, the sample used for this research consisted of individuals whose gender roles were probably more polarized than among contemporary young adults (Prince et al., 1997). A Finnish prospective study showed that for men the risk of onset of depression over 5 years is increased for those having poor emotional relations with their wives, while for women the risk is greatest among those not living alone at the beginning of the follow-up period (Kivela, 1994).

Fisher et al. (1982) reported large differences between the social support networks of older men and women, women typically having more extensive networks and friendships than men. In Prince et al.'s (1997) study, never married men reported fewer friends and neighbors, less attendance at church or clubs, and greater loneliness than women. However, methodological problems in the Prince et al. study may limit the interpretation of the nature of the relationship between social support, loneliness, handicap, and depression.

Functional Impairment and Disability. Older adults who experience impairment, disability, or handicap are also at greater risk for depression. Prince, et al. (1997) found pervasive depression in 17% of this group in the community sample they surveyed. The association between handicap and depression was so strong in this sample that adjusting

for handicap abolished or weakened the association between depression and social support, income, older age, female gender, and living alone (Prince et al, 1997).

A study by Kendig et al. (2000) found that deficits in IADL and activity limitation due to illness were predictive of depressive symptoms in a study of 1000 people aged 65 and over living in the community in Melbourne, Australia. Clearly, problems in engaging in IADL's for older individuals poses serious risk for depressive symptoms.

Patterns of onset. There seem to be two patterns of depression onset - early age onset (earlier than age 30) and late age onset (after age 30, Futterman, et al. 1995). Twin, adoption, and family studies that assess the role of genetic factors in depression indicate that early onset of depression is associated with increased genetic risk (Blehar, Weissman, Gershon, & Hirschfeld, 1988). Until recently, there had been few studies examining the genetic influences on late age onset depression (Futterman et al. 1995). The ongoing Swedish Adoption/Twin Study of Aging (SATSA; cited in Plomin & McClearn, 1990) examines genetic influences on behavioral traits and psychopathology in older adult twins, reared apart and together, using path-analytic modeling techniques. Gatz, Pedersen, Plomin, Nesselroade, and McClearn (1992) used this data to estimate that 30% of the variance in depression severity is due to genetic influences. This means that environmental influences may account for up to 70% of the variance in late onset depression (Futterman et al., 1995).

Diagnostic issues. There are some diagnostic issues which complicate rendering a diagnosis of depression in older adults. Some of these factors involve comorbid general

medical conditions; cognitive deterioration and disorders; multiple adverse life events; social support; and impairment, disability, and handicap.

One of the factors which complicates the diagnostic picture is depression's comorbidity with general medical conditions. Inpatients with major depressive disorder have an average of five comorbid Axis III disorders. Older adults may also focus on physical rather than psychological symptoms, although research findings have been mixed in this area (Brown et al, 1984; Ruegg et al, 1988; Blazer, D. G, 1997). Zisook and Downs suggested three guidelines for diagnosing depression in the face of medical disorders (1998). First, it cannot be assumed that major depressive disorder is due to old age or medical illness. When the full syndrome of a major depressive episode does present with another medical illness, it should be diagnosed as a separate, comorbid disorder and managed accordingly. Second, when an individual depressive symptom can be better understood as the direct result of a general medical condition, it should not be counted as a symptom of depression. If enough of the symptoms of the medical condition cast doubt on a diagnosis of depression, psychological manifestations should be heavily weighted. For example, fatigue that is a symptom characteristic of both influenza and depression, would not be considered in making a diagnosis of depression. Instead, psychological symptoms such as persistently depressed mood, anhedonia, feelings of helplessness and worthlessness, loss of self-esteem, or suicidal ideation would be more helpful than physical symptoms in making a diagnosis of depression in the presence of influenza. Third, the diagnostician should use ancillary information from family,

caretakers, and medical records. This information will supplement information obtained via clinical interview (Zisook & Downs, 1998).

Although the association between physical health and depression is firmly established, a number of issues remain unresolved according to Beekman et al. (1997) based on their Longitudinal Aging Study in Amsterdam (LASA). The first of their concerns is the heterogeneity of late life depression (Caine et al., 1994 cited by Beekman et al., 1997). A second issue concerns the aspects of physical health that may directly increase risk for depression in late life. A third issue is whether the risk of depression associated with a decline in physical health may be mediated by factors such as losses in social support or one's partner (Beekman et al., 1997).

Clinical heterogeneity may be due to the presence of depressive symptomology that does not reach the level of a clinical diagnosis of either major depressive disorder or dysthymic disorder (Snowdon, 1990; Blazer, 1994 cited by Beekman et al., 1997). This has led to a questioning of whether applying the current diagnostic criteria for depression to older adults is valid (Snowdon, 1990; Blazer, 1994 cited by Beekman et al., 1997, Beekman et al., 1995). The varying interpretation of diagnostic status can also affect the estimated prevalence of depression in the elderly. Epidemiological studies have assessed both major depression and depressive syndromes not fulfilling the diagnostic criteria for MDD. These later syndromes have been referred to collectively as minor depression (Blazer, 1994 cited by Beekman et al., 1997; Tannock and Katona, 1995). As it turns out, different risk factors seem to be associated with minor versus major depression. Minor depression is closely associated with stresses commonly experienced in old age

including having functional limitations and lower levels of social support. Factors associated with major depression include family history, previous history of depression and personality factors (Beekman, et al., 1995).

In their 1997 study, Beekman et al. found no independent association between major depression and the presence of either chronic physical illness or functional limitations. Instead, it was associated with partner loss and long-standing vulnerability factors such as family history of depression, locus of control and personal history. In contrast, deteriorating health was a risk factor for minor depression.

A second issue which concerns the relationship between physical health and late-life depression involves specific physical disorders which may have a direct etiological link with depression, including stroke and Parkinson's disease (Eastwood et al., 1989; Cummings, 1992). Nonetheless, community-based studies have shown that more general aspects of physical health may be more important correlates of depression than specific physical diagnoses. General aspects for this purpose include level of functional impairment and perceived health (Kinzie et al., 1986; Kennedy et al., 1989; Beekman et al., 1995). In the Beekman et al. (1997) study, more general and subjective aspects of physical health, such as functional limitations and self-perceived health, were more strongly associated with depression than specific disease categories. Whether or not factors such as social support or the presence of a partner can help modify the risk of depression due to a decline in physical health is the third issue Beekman et al. address (1997). If this is true, since chronic diseases are infrequently cured, factors attenuating the depression would be helpful.

Another factor complicating an accurate diagnosis of depression is the presence of cognitive deficits and cognitive disorders. The prevalence of cognitive impairment increases with age. For example in a research study based on a cutoff of 6 or more errors on the Mini-Mental Status Examination (MMSE) to indicate cognitive impairment, 12-15% individuals aged 55-64, 22-26% aged 75-84, and 36-45% aged 85 and older have cognitive impairment (Robins, 1991). This impairment may impair their ability to self-report symptoms (Zisook, 1998). If depressed elderly patients complain of poor thinking or concentration without other depressive symptoms, it is possible that the patients may be presenting with a comorbid dementing disorder or subclinical cognitive dysfunction amplified by depression (Riefler, 1989; Cummings, 1992).

Dementing disorders are prevalent in late life and are associated with markedly elevated rates of major depressive disorder (Riefler, 1989; Cummings, 1992). They may include either cortical (Alzheimer's disease) or subcortical (Parkinson's disease) dementing disorders. Depressive symptoms may even be one of the earliest manifestations of primary degenerative dementia. It may be difficult to differentiate between a depressive and dementing diagnosis because the cognitive symptoms of the two disorders may overlap. Other common symptoms of both disorders include low energy and social withdrawal (Zisook, 1998).

Multiple adverse life events can also complicate the diagnostic picture. For example, loss of jobs, money, homes, abilities, hopes and dreams, and friends and family can lead to fear or loneliness. In vulnerable individuals, it can either lead to or worsen depression. Because of this, many people see depression following adverse life events to

be a normal response. By treating this response as normative, a proper diagnosis and treatment may not be made. Even if depression is the result of life events, it should be considered an illness and treated accordingly (Zisook, 1998). Prince et al. (1997), using a community based sample, found a moderate correlation between pervasive depression and the number of life events experienced over the prior year. The most salient of these events included personal illness, bereavement, and use of homecare services.

Bereavement is a common event in later life given that among those over 65 at least 50% of women and 13% of men are widowed at least once. Twenty percent of elderly widows and widowers meet criteria for major depressive disorder for 2 months after their loss. For one-third of these the depression lasts for over a year. Depression is more common in women following bereavement than in men (Zisook, 1997). Risk factors for depression following bereavement include a previous history of depression; a family history of depression; intense depressive symptoms after the loss; and poor general medical health (Zisook, 1993).

Morbidity and Mortality. One of the reasons that detection and treatment of depression is so important in the elderly population is that it is highly associated with high morbidity and mortality rates (Zisook, 1998). Depressive symptoms are associated with social and physical dysfunction; number of days spent in bed; and physical pain (Wells, 1989). The World Health Organization has estimated that by the year 2020, depression will be the leading cause of disability in the world (Zisook, 1998). When comorbid with other physical illness, depression can adversely affect the course of the illness, its treatment and prognosis (Murphy, 1995).

The most serious consequence of untreated depression is death. The rate of suicide in depressed nursing home residents is estimated to be 1.5 to 3 times the rate of nursing home residents without depression (Parmelee, 1989). It is the highest risk factor for nursing home residents after myocardial infarction or cerebrovascular accident (Morris, 1993; Frasure-Smith, 1993). Suicide in older adults is twice that of other age groups and is especially high for elderly white males (Zisook, 1998).

Relationship Between Personality Traits and Depression in the Elderly.

Unfortunately, less research has been focused on personality and depression in the elderly. However, as in younger populations, studies have suggested a relationship between particular personality traits and depression in older adults. Of course, depression in the elderly may represent a chronic or enduring characterological feature that remains largely unchanged across the life span. Indeed, some studies suggest that a sizable group of older adults deal with depressive symptomology for long periods of their adult lives (Futterman, et al., 1995). Older adults who are diagnosed with dysthymia are at risk for frequent relapse (Alexopoulos, Young, & Arams, 1989).

Costa (1991) has theorized that chronic forms of geriatric depression may be explained in terms of enduring personality traits which reflect “neuroticism.” Neuroticism in this case is defined as an individual’s tendency to frequently experience dysphoric affect such as sadness, hopelessness, or dejection. It is indicated by measures of anxiety, hostility, self-consciousness, impulsiveness, depression, and vulnerability. One of the measures Costa and colleagues have used to measure these qualities is the Guilford-Zimmerman Personality Inventory. Their longitudinal personality studies have

shown that an individual's level of neuroticism remains stable over time (Costa & McCrae, 1980). More importantly, neuroticism has been shown to be a predictor of depression in the presence of common late-life stressors such as spousal bereavement (Quintilliani, Anguillo, Futterman, Thompson, & Gallagher-Thompson, 1992). Taken together, the research findings suggest that personality traits, as well as impaired ADL's, poor social support or physical health, may play a role in increasing elderly individuals' risk for depression.

Summary. The diagnosis of depression in the elderly is complicated by a number of factors including comorbid medical conditions, cognitive deterioration, multiple adverse life events, degree of social support, and physical impairment. Cognitive deterioration may make it difficult for depressed individuals to report depressive symptoms and for experienced diagnosticians to distinguish between cognitive problems and depression. In older adults, depressive symptomology in response to adverse life conditions may be ignored because it is seen as a normal response to these events.

Diagnosing depression in the elderly is complicated by factors including physical impairment, disability and handicap; social loss; multiple adverse life events; cognitive deterioration; and comorbid general medical conditions. Past research shows that unipolar depression tends to occur in elderly individuals who have multiple medical problems compared to those without such problems, and that it also occurs more often in elderly individuals who have experienced numerous adverse events. Adverse life events may include bereavement, loss of job, loss of a home, and other major life changes.

Hypotheses. Although research has found some relationships between personality traits and depression in the elderly, there are still a lot of unanswered questions. In part, lack of research on this area of study may be due to biases our society has against older individuals and their erroneous belief that they display a poor prognosis

One purpose of the present study was to examine the associations between the severity of depressive symptoms and the dimensions of the Five Factor Model as measured by the NEO-FFI in a geriatric population. Based on the existing literature, it was hypothesized that N scores would predict depressive symptom severity as measured by the Geriatric Depression Scale (GDS). There were no specific predictions for E, O, A, and C.

Although one of the factors that influences the variance in symptom severity in geriatric depression is hypothesized to be a change in neurochemistry associated with normal aging, none of the existing models (norepinephrine depletion, serotonin depletion, abnormal functioning of the HPA axis) adequately explain this process. Therefore, the current study did not use any of these neurochemical models as a factor for examining symptom severity in depression.

Also, the current study examined whether other psychosocial factors such as physical illness, social support, functional limitations, life events, and family history of mood disorders might be associated with depression in the elderly. Prior studies showing a higher incidence of depression in chronically ill or extremely disabled older adults (Futerman et al., 1995; Sptizer et al, 1978; Katon & Sullivan, 1990; Rapp, Parisi, & Walsh, 1988; Von Korff et al., 1987; Prince et al., 1997) supported a prediction that

lower scores on a measure of physical health would be associated with greater symptom severity as measured by the GDS. Moreover, it was expected that a significant correlation between neuroticism and depression symptom severity would remain, after partialing out physical symptoms.

Additionally, higher scores of depressive symptom severity, as measured by the GDS, were predicted to be associated with lower scores on level of ADL functioning. Also, consistent with findings that older adults who lack social support are more at risk for MDD (Prince, 1997), it was predicted that participants with more severe depressive symptomatology as measured by the GDS would score lower on a measure of social interaction. Because of the finding of a moderate correlation between pervasive depression and the number of life events experienced over the prior year in Prince et al.s' (1997) research, it was predicted that depressive symptoms would be significantly correlated with a greater number of adverse life events.

The relationship between age and depression was examined in this study, because of mixed research concerning the relationship of age to depression with part of research pointing to a positive relationship between these factors (Murrell, S. A., Himmelfarb, S., & Wright, K., 1983; Bermkman, L. F., Berman, C. S., Kasl, S. et al., 1986; Kennedy, G. J., Kelman, H. R., Thomas, C., et al., 1989) and part of research pointing to an inverse relationship between these factors (Beekman et al.; Newman, 1989).

CHAPTER 2

METHOD

Subjects

The participants in this study consisted of physical rehabilitation patients at the Baylor Institute of Rehabilitation (BIR) who had been admitted for physical rehabilitation following knee or hip replacement surgery. No acute care patients were included in the study. All patients were in a geriatric age group, which was defined as 65 years of age or more. Ethnicity at BIR was predominately Caucasian, since this was the predominant race treated by the facility. Approximately 80% of the participants from BIR were predicted to have been female, which matched the patient profile at the facility. Responses were not solicited from non-English speaking people. Because of vision problems in the elderly, the print size in the measures was increased to 16 points.

Procedure

The Cognitive Capacity Screening Examination (Jacobs et al., 1977) was used as a screening measure by the clinical psychology graduate student to determine that the patient was cognitively able to respond to the additional measures. After the screening measure determined the participant's ability to respond to the questionnaires, a clinical psychology graduate student was supposed to have administered another screening measure for literacy (WRAT-R, Jastak & Wilkinson, 1984), followed by one personality questionnaire (NEO-FFI, Costa & McCrae, 1985), a depression scale (GDS-SF, Yesavage, 1988), a measure of positive and negative affect (PANAS, Watson, Clark, &

Tellegen, 1988), a measure of overall functioning including medical illness and functional impairment (OMFAQ, Fillenbaum, 1988), and a measure of social support (LSSS, Norris and Murrell, 1987). However, since all of the participants chose to have the protocol administered orally by the graduate student, the WRAT-R was not completed for any of the participants. Major and minor life events such as a loss of a spouse were measured by the Major Life Events Scale (Zautra, Guarnaccia, & Carothers, 1988) and the Minor Life Events Scale. Since many of the patients have vision problems, the print on the measures was increased to 16 point font. This method was used to help reduce the chance of response errors by the participants.

The graduate student selected the participants based on the availability of the patients following their discharge from acute care to the rehabilitation program. Participants were given a disclosure statement and told that the study was intended to gain understanding of how people's personal experiences are related to depressive symptoms. The results of this study could then contribute to the development of more effective ways of treating affective illnesses. The participants were informed that their participation in the study was voluntary and that their acquiescence in the study would not affect the services that they would receive. They were given a copy of the signed consent statement that also included information about the study. This information included the phone number of the sponsoring faculty member for any questions or comments that they might have. Participant's confidentiality was protected by removing identifying information from the assessments and substituting a code number for each subject. The signed consent forms were maintained in a separate file from the completed

assessments. Only summaries of the group information will be reported, not names or individual information. The summary report will be available to the staff of the two facilities and other similar institutions that might benefit from the information in planning treatment for patients with affective illnesses. However, they will never receive copies of the surveys.

The possible benefits to the participants will include the possibility of receiving more effective treatment for their affective symptoms based on the information from this study. They will also benefit by making a contribution to society and research. There was no personal risk or discomfort associated with the study in excess of that normally associated with talking about personal information and the participant were free to withdraw their consent at any time without any effect on the services they received.

Approximately one test administration was conducted per single session of one to one and a half hours or two one-hour session over a period of 12 months.

Instruments

Older American Resources and Services Multidimensional Functional Assessment Questionnaire (OMFAQ). The OMFAQ was developed by as an integral part of the older Americans Resources and Services Program at Duke University in 1972 (Fillenbaum, 1988). The OMFAQ consists of two main parts. Part A focuses on assessment of individual functioning in each of five areas (social, economic, mental and physical health, activities of daily living). Part B focuses on assessment of service use. As of 1985, the OMFAQ had been applied in more than 150 research and clinical settings (George & Fillenbaum, 1985).

Subjects for the validity study of the OMFAQ were selected from a pool of 130 patients at the Family Medicine Clinic affiliated with the Duke University Medical Center (Fillenbaum, 1988). The validity of four of the areas of Part A of the OMFAQ were tested by correlating these areas to other measures. In the economic area, the selected criterion was an objective 6-point economic scale based on total income and assets (Fillenbaum & Maddox, 1977). For mental health, OMFAQ-based ratings were compared with assessments made by geropsychiatrists on the OMFAQ mental-health scale after semistructured personal interviews with the subjects. In the area of physical health, OMFAQ-based ratings were compared with ratings made by physicians' associates on the OMFAQ physical health scale and on the 10-point Karnofsky scale (Karnofsky & Burchenal, 1948) after structured personal examination of each subject. In the area of physical health, OMFAQ-based ratings were compared to ratings by physical therapists on a therapist-developed 12-point scale. The therapist ratings were based on home visits with participants in which the individual's capacity to perform activities of daily living was assessed. In order to validate social resources, social workers interviewed subjects and these results were compared to questionnaire results. Thirty-three out of the original pool of 130 patients provided the validation sample. Level of agreement between OMFAQ ratings and criterion ratings was determined by using Spearman's rank order correlations. On each of the four areas examined there was a statistically significant agreement between OMFAQ ratings and the criterion on the relative placement of individuals. The values respectively for economic, mental health, physical health, and self-care capacity were .68, .67, .82, and .89 respectively. Therefore,

the OMFAQ has not only content and consensual validity but, in the four areas examined, criterion validity as well.

Using the original subject responses for the validity study, 11 users of the OMFAQ rated these subjects on each of the five dimensions of Part A (Fillenbaum, 1988). Inter-rater reliability for social, economic, mental health, physical health, and self-care capacity were .823, .783, .803, .662, and .865 respectively, showing substantial inter-rater reliability. Test-retest reliability was also shown to be high.

For each of the five dimensions of Part A of the OMFAQ, additional statistical analysis was performed to identify underlying factors of these dimensions (Fillenbaum, 1988). Using 10 major OMFAQ-based surveys (n=6174) and a subsample selected to obtain an even distribution of functional impairments (n=2036), factor analyses were run separately for each of the five areas. As a result, 11 factors were obtained, three in the social area (interaction (.56), dependability (.69), affective (.71)), one in economic (perceived economic status (.86)), four in mental health (satisfaction (.70), sleep (.58), lethargy (.71), paranoid (.52)), one in physical health (subjective health perceptions (.74)), and two in self-care capacity (instrumental ADL (.87), physical ADL (.84)).

The NEO Five-Factor Inventory (NEO-FFI). The NEO-FFI is a short version of the NEO Personality Inventory (NEO-PI) designed by Costa and McCrae (1985) to provide self- and other-reported measures of the five-factor model of personality. Neuroticism (N), Extroversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C) are the personality dimensions measured by the test. The NEO-

FFI was developed from factor-analytic work on data from a 1986 administration of the NEO-PI to 983 men and women (Costa and McCrae, 1988).

In a study with 983 adults, Costa and McCrae (1988) found that the NEO-FFI scales showed correlations ranging from .75 for Conscientiousness to .89 for N when correlated with the NEO-PI. Internal consistency for the NEO-FFI scales was calculated using an alpha coefficient. Values were .89, .79, .76, .74, and .84 for N, E, O, A, and C, respectively.

The validity of the NEO-FFI scales was tested by correlating the scales of the NEO-FFI to other measures of the five-factor model based on self-reports, ratings by spouses, and by peer ratings of the NEO-PI factors. On the self-reports, the convergent correlations ranged from .56 to .62; divergent correlations ranged from <.20. The spouse reports of the NEO-PI factors showed convergent correlations ranging from .39 to .53. The divergent correlations were < .30. On the peer ratings of the NEO-PI factors, the convergent correlations ranged from .34 to .59 and all divergent correlations were < .19 (Costa and McCrae, 1985).

The Positive and Negative Affect Scale (PANAS). The PANAS (Watson, Clark, & Tellegen, 1988) has two 10-item scales (positive affect or PA and negative affect or NA) and assesses positive and negative feeling states during the previous week (Appendix C). Watson et al. (1988) report alpha reliabilities of .88 and .87 for the PA and NA scales, respectively, and an appropriate pattern of discriminant and convergent validity with undergraduates.

The Geriatric Depression Scale - Short Form (GDS-SF). The GDS-SF (Yesavage, 1988) is a validated short 15- item version of the GDS (a 30-item instrument designed specifically for the assessment of depression in the elderly (Brink, et al., 1982). On the GDS, nine items measure positive affect or attributes, therefore scores on these items are reversed in order to develop a composite score. Scores on the GDS range from 0 (absence of depression) to 30 (severe depression) (Intrieri & Rapp, 1993). It de-emphasizes depressive features of older age that are confounded with normal aging or other disease processes. It assesses almost exclusively psychological components of depression. In addition, the answer format for this scale is a true/false one and easier for older people, especially more debilitated elderly, to respond to (Hyer & Blount, 1984). Brink and Yesavage evaluated the GDS and the Beck Depression Inventory and in so doing provided concurrent and discriminant validation for the GDS. In this study, the GDS was better in discriminating depression in older groups than the Beck Depression Inventory (Brink et al, 1982).

In a study of 61 psychiatric inpatients comparing Beck Depression Inventory scores to the GDS, Hyer and Blount (1984) found that the scores on the GDS scale were a more precise indicator of depression diagnosis than the Beck Depression Inventory. In addition, the scale was also a better discriminator between two older groups, depressed and non-depressed, than the Beck scores. Both correlational and comparison analyses were calculated. The correlation coefficient between the two depression self-report scales is .73. This provides good evidence for concurrent validation for the GDS. Further analyses showed that neither depression scale was significantly related to

previous hospitalization, education, or intelligence. Scores on each scale, however, were related to the existence a depression diagnosis: BDI, $r = .27$ ($p < .01$); $r = .43$ ($p < .001$).

A related analysis focused on the differences between discrete groups, depressed and non-depressed in order to provide further evidence for discriminant validity. There were no differences between the groups on the background variables of previous hospitalization, education, and intelligence. The BDI and GDS, however, did differentiate between these groups. The GDS was better able to discriminate depression from non-depression patient groups.

The Short Form of the GDS was designed by selecting the 15 questions from the GDS which had the highest correlation with depressive symptoms in Yesavage et al.'s validation study (Sheikh & Yesavage, 1986). A score of 6 or more on the short 15-item version indicates the presence of depression (Chan, Alfred Cheung-M, 96). The validation study comparing the Long Form of the GDS with the Short Form was composed of 35 elderly subjects (18 normal elderly from the community and 17 elderly patients in a variety of treatment settings for depression). The latter group met the DSM-III criteria of either a major depression or dysthymic disorder. Both male and female subjects over the age of 55 were included. When subjects were given both versions of the GDS, the GDS successfully differentiated depressed from non-depressed subjects with a high correlation ($r = .84$, $p < .001$) (Sheikh & Yesavage, 1986).

Louisville Social Support Scale (LSSS). The LSSS (Norris & Murrell, 1987) is a 13 item scale made up of four items from Phillips (1967) social participation index, seven items from Andrews, Tennant, Hewson, and Scharnell (1978) scale about the amount of

help available to people during a crisis, and two new items (Murrell & Himmelfarb, 1989). Each item on the scale is rated from one to five, so the total possible scores range from 13 to 65, with higher numbers representing low social social. The LSSS had an alpha internal consistency of .82, and test-retest reliability of .70 in a sample of 1,411 adult subjects (Murrell & Norris, 1991).

The LSSS has two subscales. Items one through six form the Social Embeddedness subscale, which is the size and closeness of a person's social network. Items eight through twelve form the Expected or Perceived Social Support subscale. Neither sub-scale incorporates item seven because of its potential to overlap both subscales (based on unpublished data). The Social Embeddedness subscale has a reliability of .67 and the Expected Social Support subscale has a reliability of .83 from a sample of 1,326 adults 55 years and older (Murrell & Norris, 1991).

Minor Life Events Scale. The ISLE was designed to measure both positive and negative small life events. An edited older adult version (Zautra, Guarnaccia, & Carothers, 1988) of the Inventory of Small Life Events (ISLE) (Zautra, Guarnaccia, & Dohrenwend, 1986) was administered to measure minor life stress. The edited version is a 48 item measure that includes those minor negative life events that a sample of older adults most commonly acknowledged as happening to them (probability greater than or equal to .02 occurrences per month) (Zautra, Guarnaccia, & Carothers, 1988). The measure required participants to indicate those items on the list that they had experienced in the past one month. The total score was the number of items indicated by the participant, so the range was from zero to 48.

Major Life Events Scale. The second life events scale, the Major Life Events Scale, is an edited version of the Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend, Krasnoff, Askena, & Dohrenwend, 1978). It is a list of 48 major life events from the PERI most commonly endorsed by older adults (Zautra, Guaranaccia, & Carothers, 1988). Participants were required to indicate those items on the list that they had experienced within the last one year. As in the minor life events scale, the score was the total number of items that the participant indicated.

Cognitive Capacity Screening Examination (CCSE). Jacobs et al. (1977) developed the CCSE as a more extensive mental status exam than its predecessors (MSQ, SPMSQ, and MMSE). It is made up of thirty items scored on a nominal scale to assess cognitive impairment. The content of the CCSE includes orientation, digit span, serial-sevens, repetition, verbal concept formation, and short-term memory. A preliminary test on six patients by three clinicians suggested a very high concordance (Jacobs et al., 1977). Foreman (1987) found that the CCSE had a high level of internal consistency ($\alpha = .97$) in a study of 66 elderly patients. Haddad and Coffman (1987) reported excellent test-retest reliability ($r = .87$). As summarized by Nelson et al. (1986), four studies have been conducted on the CCSE which offer criterion-related validity based on psychiatric and medical patients. In general, recent research has found that the CCSE has good sensitivity and excellent specificity (Rogers, 1995).

CHAPTER 3

STATISTICAL ANALYSIS

Operational Definitions

For the purposes of this study the major variables were operationally defined as follows:

Personality. This broad term was operationalized through use of the NEO Five Factor Inventory (NEO-FFI) instrument (Costa and McCrae, 1988). The NEO-FFI was scored according to instructions provided by the authors, and yielded five scale (factor) values for each person. A copy of the instrument was included in the Appendix. The five scales of the NEO-FFI instrument were named by the authors as follows:

1. Neuroticism (N)
2. Extraversion (E)
3. Openness (O)
4. Agreeableness (A)
5. Conscientiousness (C)

Depression was operationally defined by scores on the GDS-SF and negative and positive affect were assessed via the PANAS.

Physical illness and functional limitations was operationally defined by using the Physical Health and ADL scales respectively of the OMFAQ.

Life events was operationally defined by the Major Life Events Scale and the Minor Life Events Scale.

Social support was operationally defined by the Louisville Social Support Scale.

Descriptive Statistics

Participants were compared on demographic variables (income, age, and education).

Pearson Product-Moment Correlations

Pearson product-moment correlations were performed to test the hypothesis that a significant correlation exists between neuroticism as measured by the NEO-FFI neuroticism scale and greater depressive symptom severity as measured by the GDS. A correlation was performed to test the hypothesis that a significant relationship exists between lower functioning as measured by the OMFAQ and the greater depressive symptom severity as measured by the GDS. Partial correlations were then performed to support the hypothesis that a significant correlation exists between personality traits as measured by the NEO-FFI and severity of depressive symptoms as measured by the GDS for the participants even after partialing out physical symptoms as measured by the number of chronic health problems assessed on the OMFAQ.

Research has also shown that the social changes that accompany these events may predispose or insulate elderly individuals from depression. As a result, it was important for the current study to incorporate the number and type of participants' medical illnesses as well as a measure of the number of adverse life events and social losses they had experienced.

One instrument which provides such an array of measures is the Older Americans Resources and Services Multidimensional Functional Assessment Questionnaire

(OMFAQ, Fillenbaum , 1988). The OMFAQ is a multilevel assessment instrument which was included in the present study to determine the correlation between depression and physical health factors. The Minor Life Events Scale (Zautra, Guarnaccia, & Carothers, 1988) and the Major Life Events Scale (Zautra, Guarnaccia, & Carothers, 1988) was used to measure major life events and social losses.

The cognitive abilities of elderly individuals may make it difficult to assess whether they are depressed because of their inability to respond appropriately to diagnostic interviews. Studies have also shown higher level of unipolar depression in cognitively impaired populations. In the present study a Cognitive Capacity Screening Examination (CCSE, Jacobs et al., 1977) was administered to determine the participants' level of cognitive functioning.

Another factor that has been studied in association with unipolar depression is personality. Neuroticism is a trait often associated with both unipolar and bipolar depression in research studies. The present study incorporated the NEO-FFI in order to determine the relationship between personality traits and severity of depressive symptoms. The results of the study were expected to show a relationship between depression and adverse life events, disability, health problems, level of social support, and personality.

Regression Analyses

The relationship between risk factors for depression and symptom severity was assessed in three ways using multiple regression. First, three regression analyses models

were devised to determine the independent variables that would predict outcome variables including GDS-SF PANAS PA, and PANAS NA scores.

The initial stepwise regression analysis was performed to test the hypothesis that greater depressive symptom severity as measured by the GDS total score would be predicted by lower scale scores on levels of functioning as measured by the OARS and by higher scale scores on Neuroticism scales of the NEO-FFI. The dependent variable was depressive symptom severity as measured by the score on the Geriatric Depression Scale - Short Form. The independent variables were life satisfaction, level of functioning on instrumental ADL's, personality characteristics (conscientiousness, neuroticism, extraversion), age, gender, and education. The independent variables for the stepwise regression model were selected because of their significant correlation to depressive symptom severity as measured by the GDS-SF. However, mental status was excluded from the model, because it was employed solely as a screening measure for the administration of the entire interview. Since participants could be excluded on the basis of a cutoff score, the restricted range of scores could have inappropriately affected the prediction of depressive symptom severity. Both negative and positive affect, although highly correlated with depressive symptom severity as measured by the GDS-SF, are better conceptualized as outcome variables indicative of mood.

A second stepwise regression analysis was performed to see which of the factors associated with depressive symptom severity would also be predictive of positive affect. The dependent variable was the score on the PANAS Positive Affect (PA) scale. The third stepwise regression analysis was performed to see which of the factors associated

with depressive symptom severity would also be predictive of negative affect. The dependent variable was the score on the PANAS Negative Affect (NA) scale of the PANAS. The independent variables for the second and third stepwise regression were identical to those used in the initial regression model.

CHAPTER 4

RESULTS

Characteristics of the Sample

In Table 1, demographic and health-related characteristics of the sample are shown. The mean age of the participants was 73.2 years, range 61-85. Significantly more women than men participated, but this was representative of the population studied. The educational level of the subjects was relatively high, with 97% of the sample having completed a high school education and 63% having received formal education beyond the high school level. The high proportion of unmarried subjects may be due to the presence of a high proportion of older-old female subjects, since life expectancies for women tend to be higher than for men. Despite the large number of chronic physical illnesses reported by subjects (80% had 2 or more chronic physical illnesses), 80% reported excellent or good perceived physical health. Eighty-nine percent of the subjects reported excellent or good perceived mental health, consistent with the low score on GDS for the majority of the subjects. Nine percent of the sample had scores greater than 6 on the GDS-SF, which indicates the presence of depression.

Tables 2 through 4 display descriptive statistical information for the sample as a whole (Table 2) as well as by gender (Table 3 and 4). The only statistically significant difference between the factors considered in this study on the basis of gender was perceived economic resources, with men ($M = 5.00$, $SD = 0.00$) showing significantly more certainty as to the ability of their current resources to meet their needs than women

($M = 4.38$, $SD = .73$), $t(33) = 2.065$, $p = .05$ (two-tailed), $d = .62$. There was not a significant difference in GDS-SF severity scores on the basis of gender.

Internal consistency of scales and subscales of independent and dependent measures

The scales of the PANAS, NEO-FFI, the OMFAQ, Major Life Events Scale, Minor Life Events Scale, the GDS-SF, and the LSSS were analyzed for internal consistency using the data gathered for the 35 participants in this sample. For the PANAS, there was a high level of internal consistency for the items making up negative affect ($\alpha = .80$) and positive affect ($\alpha = .91$). Descriptive statistics by gender are included in Table 2.

The items making up the five scales of the NEO-FFI (N, E, O, A, C) ranged from a moderate level of internal consistency for openness to experience ($\alpha = .64$) to a high level of internal consistency for conscientiousness ($\alpha = .86$). There was a significant correlation between the five scales of the NEO-FFI ranging from an inverse correlation between extraversion and neuroticism ($\sigma = -.62$, $p = .01$) to a positive correlation between agreeableness and conscientiousness ($\sigma = .58$, $p = .01$).

Many of the scales described in the OMFAQ (economic, mental health, physical health, self-care capacity) were modified for our sample to yield moderate (physical health, $\alpha = .51$) to high levels of internal consistency (instrumental dimension of ADL for self-care capacity, $\alpha = .78$). The two ADL scales making up the OMFAQ Self-care factor were not significantly correlated. The Major Life Events Scale ($\alpha = .43$) had a low level of internal consistency, while the Minor Life Events Scale ($\alpha = .78$), and GDS-SF ($\alpha = .78$) had high levels of internal consistency. Both the social

imbeddedness ($\alpha = .63$) and perceived social support ($\alpha = .67$) scales of the LSSS displayed moderate levels of internal consistency, after eliminating two of the items from the social imbeddedness scale. However, these two scales composing the LSSS were not significantly correlated.

Associations with Independent Variables

In Table 5 the correlations between the independent variables and GDS-SF depression symptom severity are displayed. To examine the possible influences of perceived economic resources (OMFAQ), life satisfaction (mental health scale of OMFAQ), lethargy (mental health scale of OMFAQ), functional abilities, affect, social support, mental status and personality factors on symptom severity of depression, the correlations of GDS-SF depression scores with OMFAQ, MMSE, NEO-FFI, and LSSS scores of participants were examined. As predicted, neuroticism and depressive symptom severity were positively related. Perceived physical health and Instrumental ADL scores, as predicted, were inversely related to depressive symptom severity. Life satisfaction (OMFAQ) and lethargy were inversely related to symptom severity. In addition, extraversion and conscientiousness were negatively associated with depression symptom severity. The negative affect score of the PANAS and depressive symptoms were positively related, while the positive affect score of the PANAS and depressive symptoms were inversely related. Mental status was inversely related to symptoms of depression.

To examine the possible influences of neuroticism on symptom severity of depression in view of physical symptoms, the correlation of GDS-SF depression scores

with the NEO-FFI neuroticism score of participants was examined, while controlling for physical symptoms measured by the number of chronic physical problems on the OMFAQ. As predicted, neuroticism and depressive symptom severity were positively related, controlling for physical symptoms $pr = .48, p = .022$.

To examine the possible influences of age, gender, and education, on perceived economic resources, life satisfaction, lethargy, functional abilities, affect, social support, mental status, and personality factors, Pearson Product Moment correlations were computed. Perceived economic resources and functional abilities as measured by the OMFAQ were inversely related to age, while mental status as measured by the MMSE was inversely related to gender.

Since age and ADL's were highly correlated, the correlation of GDS-SF depression scores with age of the participants was examined, while controlling for Instrumental ADL scores. Age and depressive symptom severity were inversely related, controlling for ADL's, $pr = -.31, p = .05$.

Multivariate Comparison of Predictors

The regression models for predicting GDS-SF, positive affect, and negative affect scores are shown in Table 6. Considering GDS-SF scores, neuroticism accounted for 20% of variance in GDS-SF scores. Instrumental ADL, neuroticism, and age were significant predictors. Independence in IADL (9%) and age (8%) accounted for an additional combined 17% of variance in GDS-SF. In total, 37% of the variance in GDS-SF scores was explained by these three predictor variables. None of the other variables contributed to the prediction of GDS-SF scores. The association with instrumental

ADL's was negative (standardized beta = $-.54$), indicating that, controlling for other variables, individuals with an increased ability to perform everyday tasks are less likely to suffer from depressive symptomatology. The association between depressive symptom severity affect and age was negative, indicating that, controlling for other variables, the older-old are less likely to experience increased symptoms of depression.

For the PANAS negative affect (NA) variable, the significant predictors were neuroticism and age. Neuroticism accounted for approximately 15% of the variance, while age accounted for an additional 10% of the variance in NA. In total, 25% of the variance in negative affect was explained by these two predictor variables. The association between negative affect and age was negative (standardized beta = $-.35$), indicating that, controlling for other variables, the older-old are less likely to experience negative affect.

For the PANAS positive affect (PA) variable, extraversion was able to account for 29% of the variance in PA.

CHAPTER 5

DISCUSSION

The current study has examined how personality traits and overall level of functioning were able to predict elderly individuals' symptoms of depression. Additional factors were considered for their possible contribution to depressed mood, including social support, medical illness, and life events. Data from a small sample of geriatric joint replacement patients in a rehabilitation unit of a major metropolitan hospital provided the means to assess the relative importance of these possible influences on symptoms of depression.

Correlational analyses showed that both positive and negative mood were significantly correlated with depressive symptom severity. Consistent with previous research, the results indicated that life satisfaction, instrumental ADL's, perceived physical health (Kinzie et al., 1986; Kennedy et al., 1989; Beekman et al., 1997), mental status (Riefler, 1989; Cummings, 1992), and certain personality factors - neuroticism, extraversion, conscientiousness - were significantly correlated with severity of depressive symptoms (Costa, 1991).

However, physical illness measured by the number of chronic physical illnesses was not found to be significantly correlated to severity of depressive symptoms. The research in this area has been somewhat inconsistent. Although Katon and Sullivan (1990) have found a connection between physical illness and depression, other researchers including Beekman et al. (1995) have suggested additional factors, which

might affect the relationship between physical illness and depression in the elderly. Their findings indicated that the nature of the chronic disease was more important than the actual number of health problems (Beekman et al., 1995; Eastwood et al., 1989; Cummings, 1992). For example, Parkinson's and other disorders were found to be more highly correlated with major depressive disorder than other chronic illnesses (Eastwood et al., 1989; Cummings, 1992). In addition, although 79% of the participants reported two or more chronic health problems, 79% reported perceived physical health as good or excellent. Therefore, it is possible that an individual's perceptions of their physical health more significantly impact their proness to depression rather than the actual presence of physical illness.

The only statistically significant difference between the factors considered in this study on the basis of gender was perceived economic resources, with men expressing more confidence in their ability to meet their financial obligations with their current resources than are women. Depression as measured by the GDS-SF scores of participants did not differ as a function of gender. This finding is consistent with earlier research (Blazer, D. G., 1993). Although both the ECA and NCS show greater prevalence of depression in women than men during the early stages of life, this difference in rates of depression narrows as age increases (Blazer, D. G., 1993). Lifetime prevalence rates of major depression for adult women range from 7% (Weissman et al., 1991, p. 66) TO 21% (Kessler et al., 1994, p. 12) and between 4% and 8% for dysthymia. For men, lifetime rates of major depression range between 3% (Weissman et al., 1991) to 13% (Kessler et al., 1994) and between 2% and 5% for dysthymia. Although research

studying the risk factors for depression in an older population continues to show a higher rate of depression in women than in men, there is less of a difference than in younger age groups. Beekman et al. (1995) reported that except in the youngest age group of older adults (55-85), women had higher prevalence rates for both major and minor depression - roughly twice as high as that for men. However, this rate is still substantially more equal than that found between men and women in other age groups. Our findings are consistent with the prior findings that the prevalence of depression in men and women becomes more similar with an increase in age (Blazer, D. G., 1993).

PANAS positive affect (PA) - feeling happy, contented, etc. - was predicted largely by the NEO trait of extraversion. PANAS negative affect (NA) - feeling sad, annoyed, worried, etc. - was predicted by the NEO trait of neuroticism and age, with NA being less likely with increase in age. The predictive model for depressive symptoms had higher explanatory power compared to the models which predicted the NA and PA variables. Independence in Instrumental ADL and neuroticism and age were significant predictors of depressive symptom severity. The finding that neuroticism was a significant predictor of negative affect was consistent with prior research establishing an association between neuroticism and negative affect (Cappeliez, 1993; Costa & McCrae, 1980; Gilbert and Reynolds, 1990; Tellegen, 1985; Watson & Clark, 1992). Similarly the finding that extraversion was a predictor of positive affect was consistent with prior research establishing an association between extraversion and positive affect (Gilbert & Reynolds, 1990).

Overall, the findings support the proposition that functional ADLs have an important influence on severity of depressive symptoms. This finding is consistent with prior research by Prince, et al. (1997) that showed older adults who experience impairment, disability, or handicap in ADLs are at greater risk for depression and research by Kendig et al. (2000) that shows independent ADL and activity limitation due to illness to be significant predictors of depressive symptoms in people over 65 years of age.

The findings of this study also support the proposition that personality factors exert an important influence on mood and are consistent with those found in prior research. In the present study, neuroticism was found to be a predictor of both negative affect and the severity of depressive symptoms. This finding was consistent with the 1995 research of Bagby, et al., which found that neuroticism was a predisposing factor for major depression in a younger sample. Although little research is available to support the relationship between neuroticism and depression in an older population, Henderson et al. (1993) found a correlation between neuroticism and depressive symptoms in a sample of older adults who displayed “below case level” depressive symptoms. The results of the current study indicate a relationship between neuroticism and depressive symptoms consistent with both Bagby et al.’s (1995) and Henderson et al.’s (1993) research.

The findings of the current study suggest that depressive symptomatology and negative affect could be predicted by decreased age. Within the age group of 65+, there are mixed findings on the relationship between age and depression. Generally, older individuals (aged 65 and older) have lower lifetime prevalence rates of depression than

other age groups. For example, the ECA reports lifetime prevalence rates for major depressive groups for four age groups: 18-29, 5.0%; 30-44, 7.5%; 45-64, 4.% and 65+, 1.4%. The rates of dysthymia for the same four groups are respectively, 3.0%, 3.8%, 3.6%, and 1.7% (Weissman et al., 1991, p. 66). However, the rate of depression in older adults can vary on the basis of age categorization, symptom severity, and subgroup membership.

Newman (1989) found an inverse relationship between age and depressive symptomatology when he discriminated between individuals over 65 years of age on the basis of major and minor depression. He found that the prevalence of major depression tends to decrease among the older-old (75-84), while the prevalence of minor depression (depressive syndromes not fulfilling diagnostic criteria for MDD) seems to be highest in the oldest age groups (85+). In their study, Beekman et al. (1997) showed that the older-old (75-85) were less likely to suffer from major depression than the younger-old (65-74). However, other studies found depressive symptoms in older adults to be the most prevalent in the “oldest old” (80 years and older) (Murrell, S. A., Himmelfarb, S., & Wright, K., 1983; Berkman, L. F., Berman, C. S., Kasl, S. et al., 1986; Kennedy, G. J. Kelman, H. R., Thomas, C., et al., 1989).

Perhaps the seeming discrepancies between the findings in these studies can be resolved by seeing the results based on the presence of several subgroups based on age (young-old, older-old, and oldest-old) within the larger categorization of older individuals (65+). Feinson (1985) noted that this tendency to group subjects over 65 together in one age category may indicate that age distinctions are viewed as important

for young and middle-aged adults, but not older adults (1985). Feinson and Thoits (1986) found prevalence rates of the presence of any psychopathology in adults of over 65 to range from 6% to 37%, depending on the specific old age category. Therefore, further categorization within the age group of 65+ is important in researching depression in adults 65 years and older.

It could be that the younger-old (65-74), the older-old (75-85), and the oldest-old (80+) may differ in their rates of depression. The sample in the current study involves individuals aged 65 to 84; therefore, it did not involve patients in a much older age group (80+). Conceivably, the group of adults aged 80+ could encompass individuals between the ages of 85 and 100. Risk factors for depression (higher rates of physical disability, increased physical illness, and lack of social support), could be affecting the oldest-old group and producing rates of depression very different than those found in the current study's sample of individuals aged 65-84. Therefore, the finding of an inverse relationship between age and depression in this sample of 65-84 year-old individuals is consistent with similar findings in studies involving the older-old (Beekman et al., 1995; Newman, 1989) and distinguishable from earlier studies involving the oldest-old (Murrell, S. A., Himmelfarb, S., & Wright, K., 1983; Berkman, L. F., Berman, C. S., Kasl, S.).

Perhaps the combination of symptom severity and the age distribution in the current study contributed to the inverse relationship found between age and depression. Both studies by Newman (1989) and Beekman et al. (1985) found relationships between age and symptom severity (minor versus major depression). Newman found that the

prevalence of major depression tends to decrease among the older-old (75-84), while the prevalence of minor depression seems to be highest in the oldest age groups (85+). In the community sample used in their study, Beekman et al. (1995) found different prevalence rates for major depression (2.02%) and minor depression (12.9%). The risk factors for minor depression (depressive syndromes not fulfilling rigorous criteria) were stresses commonly experienced in older age, such as having functional limitations, smaller contact networks, and less exchange of social support, while family history, previous history, and personality factors were strong predictors of major depression (Beekman et al., 1995). Perhaps the inverse relationship between age and depression in the current study are due to the type of depression (minor versus major) as well as to the age category to which the individuals belong.

In summary, these findings might have important implications for preventing or managing depression in the elderly. If depression is the result of loss of independence or the loss of once enjoyed activities because of impaired ADL skills it would be important to implement support systems which allow older adults access to these activities and to help older adults maintain a sense of independence. For example, offering older adults new choices that would allow them a sense of efficacy.

A limitation of this study was the unavailability of a clinical population, which would have made it more comparable with existing studies. Another limitation was the relatively small sample size. In addition, this particular sample was different than the general population in terms of education, race, and financial resources (high level of education, all Caucasian, relatively financially secure), which may make it difficult to

generalize these findings to a larger population. Another concern is the failure of this study to include family history of depression and client's prior psychological history as factors, particularly since these factors have been important predictors of depression in prior studies including those of Beekman (1995). This study only included a query on the use of psychological services and psychotropic medications within the six months prior to subject interview. Although there were only two positive responses to these queries, the participants could have had a family history of mood disorders or an individual history that would not have been detected by these queries. One of the other concerns with this study was the strong self-selection bias that may have impacted the personality traits reported. The personality traits that predisposed subjects to participate could also have biased the study. In addition, a repeated measures study would have been important to see how personality trait scores relate to depression in acute phases compared to non-acute ones.

In conclusion, future studies into the relationship between personality and mood disorders in geriatric populations seem to be warranted, particularly in respect to the type of affect involved in depression. However, they would need to include a larger more diverse sample, a clinical as well as a control group, and adequate information about family and individual history of psychological disorders and psychotropic medication usage than in the current study. In addition, a repeated measures study showing the levels of personality factors would be important in both acute and resolved cases of depression.

Table 1

Demographic Information for Total Sample

Characteristic	n (%)	Characteristic	n (%)
Age		Cognitive Functioning	
65-74	19 (54%)	CCSE \geq 24	29(83%)
75-84	16 (46%)	CCS E<23	6 (17%)
Sex		Marital Status	
Males	6 (17%)	Married	12 (34%)
Females	29 (83%)	Not/no longer married	23 (66%)
Level of Education		Chronic Physical Illness	
< High School	1 (3%)	None	0 (0%)
High School	12 (34%)	One	7 (20%)
Post High School	2 (6%)	Two	9 (26%)
1-3 Years College	10 (28%)	Three	10 (29%)
Bachelor's Degree	1 (3%)	Four	3 (9%)
Graduate College	9 (26%)	Five	4 (10%)
		Six	2 (6%)
Perceived Physical Health		GDS-SF Scores	
Excellent	12 (34%)	Less than 6	32 (91%)
Good	16 (46%)	6 or more	3 (9%)
Fair	6 (17%)		
Poor	1 (3%)		
Perceived Mental Health			
Excellent	21 (60%)		
Good	10 (29%)		
Fair	4 (11%)		
Poor	0 (0%)		

Table 2

Descriptive Statistics for Total Sample

Variable	Minimum	Maximum.	Mean	Std. Dev.
Perceived Economic Resources	3	5	4.49	.70
Satisfaction	3	8	6.83	1.36
Lethargy	0	4	1.60	1.17
Instrumental ADL	6	14	13.20	1.53
Perceived Social Support	5	14	8.20	2.87
Perceived Physical Health	0	3	2.11	.80
Perceived Mental Health	1	3	2.49	.70
Negative Affect	10	32	17.86	6.24
Postive Affect	22	50	38.03	9.11
NEO Neuroticism	1	25	14.66	5.03
NEO Extraversion	16	48	29.86	7.00
NEO Conscientiousness	20	48	33.54	5.90
Mental Status	20	30	25.00	2.44
GDS Score	0	9	2.54	2.15

n=35

Table 3

Descriptive Statistics for Male Participants

Variable	Mean	Std. Dev.
Perceived Economic Resources	5.00	.00
Satisfaction	7.17	1.17
Lethargy	1.17	.98
Instrumental ADL	14.00	0.00
Perceived Social Support	9.50	3.45
Perceived Physical Health	2.33	.52
Perceived Mental Health	2.83	.41
Negative Affect	16.83	6.88
Postive Affect	38.83	10.46
NEO Neuroticism	15.83	3.71
NEO Extraversion	27.17	6.85
NEO Conscientiousness	30.33	6.38
Mental Status	26.67	2.94
GDS Score	2.33	1.03

n=6

Table 4

Descriptive Statistics for Female Participants

Variable	Mean	Std. Dev.
Perceived Economic Resources	4.38	.73
Satisfaction	6.76	1.41
Lethargy	1.69	1.20
Instrumental ADL	13.03	1.64
Perceived Social Support	7.93	2.72
Perceived Physical Health	2.07	.84
Perceived Mental Health	2.41	.73
Negative Affect	18.07	6.20
Positive Affect	37.90	9.03
NEO Neuroticism	14.41	5.29
NEO Extraversion	30.41	7.02
NEO Conscientiousness	34.21	5.69
Mental Status	24.66	2.22
GDS Score	2.59	2.32

n=29

Table 5

Correlation for Total Sample

Variable	GDS-SF Score	Age	Gender	Education
Perceived Economic Resources	-.30	-.38*	-.34*	.25
Satisfaction	-.42*	-.24	-.12	.11
Lethargy	-.12	.04	.17	-.15
Instrumental ADL	-.46**	-.53**	-.24	.28
Perceived Social Support	.25	-.08	-.21	-.08
Perceived Physical Health	-.49**	-.04	-.13	.12
Perceived Mental Health	-.40**	-.22	-.23	.20
Negative Affect	.57**	-.28	.08	.23
Positive Affect	-.51**	.09	-.04	-.16
NEO Neuroticism	.48**	.16	-.11	-.06
NEO Extraversion	-.43*	-.02	.18	-.13
NEO Conscientiousness	-.45**	-.13	.25	-.23
Mental Status	-.38*	-.35*	-.32	.17

*p = .05, **p = .01

Table 6

Regression Analyses for Total Sample

Criterion	Predictor	Beta	Adjusted R2	F	p
GDS-SF Severity	NEO Neuroticism	.37	.20	7.81	.0005
	Instrumental ADL	-.54	.29		
	Age	-.36	.37(total)		
Negative Affect	NEO Neuroticism	.47	.15	6.73	.0040
	Age	-.36	.25(total)		
Positive Affect	NEO Extraversion	.56	.29(total)	11.69	.0020

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